



Patent
Attorney's Docket No. 1028722-000381

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of

Douglas G. Storey et al.

Application No.: 10/828,557

Filed: April 21, 2004

For: **METHODS TO REGULATE
BIOFILM FORMATION**

) Group Art Unit: 1645

) Examiner: ROBERT A ZEMAN

) Confirmation No.: 5430

) I hereby certify that this correspondence is being
) deposited with the United States Postal Service
) on April 26, 2006, as first class mail under 37
) C.F.R. §1.8 and is addressed to the Commissioner
) for Patents, P.O. Box 1450, Alexandria, VA 22313-
) 1450.

) By: _____

Kim A. Cabello

TRANSMITTAL

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Transmitted herewith for filing are the following:

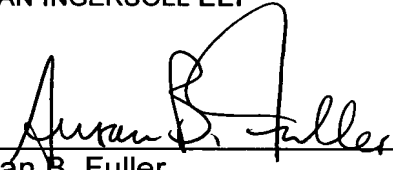
1. Miscellaneous Communication;
2. Copy of previously presented Form PTO-1449;
3. Copies of two cited references; and
3. Return Receipt Postcard.

No fee is believed to be due in connection with the attached paper. However, in the event a fee is required please charge, or to credit any overpayment to, Deposit Account No. 02-4800. This paper is submitted in duplicate.

Respectfully submitted,

BUCHANAN INGERSOLL LLP

Date: April 26, 2006

By: 
Susan B. Fuller
Registration No. 51,979

P.O. Box 1404
Alexandria, VA 22313-1404
Tel: (858) 509-7300



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

re Patent Application of)

Douglas G. Storey et al.)

Application No.: 10/828,557)

Filed: April 21, 2004)

For: METHODS TO REGULATE BIOFILM)
FORMATION)

Group Art Unit: 1645)

Examiner: ROBERT A ZEMAN)

Confirmation No.: 5430)

Certificate of Mailing)

I hereby certify that this paper is being deposited with
the United States Post Service as first class mail on
April 26, 2006, in an envelope addressed to the
Commissioner for Patents, P.O. Box 1450, Alexandria,
VA 22313-1450)

By:)

Kim A. Cabello)

MISCELLANEOUS COMMUNICATION

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Please find attached copies of references cited in Applicant's previously submitted
Form 1449. Although previously cited, the Examiner was unable to locate copies of the
references. Applicants respectfully request that the Examiner consider the references
attached and provide an initialed copy of the Form 1449 to Applicants accordingly.

Respectfully submitted,

BUCHANAN INGERSOLL PC

Date: April 26, 2006

By:)

Susan B. Fuller)

Registration No. 51,979)

P.O. Box 1404
Alexandria, Virginia 22313-1404
(858) 509-7300

FIRST
INFORMATION DISCLOSURE
STATEMENT BY APPLICANT

MAY 01 2006

Application Number 10/828,557

Filing Date April 21, 2004

First Named Inventor Douglas G. Storey et al.

Examiner Name ROBERT A ZEMAN

Attorney Docket Number 028722-381

(Use as many sheets as necessary)

7

U.S. PATENT DOCUMENTS

| Examiner Initials | Document Number | Kind Code (if known) | Name of Patentee or Applicant of Cited Document | Issue/Publication Date (MM-DD-YYYY) |
|----------------------|--------------------|-------------------------|--|--|
| | | | | |
| | | | | |
| | | | | |

FOREIGN PATENT DOCUMENTS

| Examiner Initials | Document Number | Kind Code (if known) | Country | Date of Publication (MM-DD-YYYY) | STATUS | | | | | | |
|----------------------|--------------------|-------------------------|---------|--|-------------|------------------------|-----------------------|------------------|------|----------|------------------|
| | | | | | Translation | Partial Translation | Eng. Lang. Summary | Search Report | IPER | Abstract | Cited in Spec |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

NON-PATENT LITERATURE DOCUMENTS

| Examiner Initials | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published. |
|----------------------|---|
| RZ | Aarons, S. et al., "A regulatory RNA (PrrB RNA) modulates expression of secondary metabolite genes in <i>Pseudomonas fluorescens</i> F113," <i>Journal of Bacteriology</i> , 182(14):3913-3919 (2000). |
| RZ | Anwar et al., "Susceptibility of biofilm cells of <i>Pseudomonas aeruginosa</i> to bactericidal actions of whole blood and serum," <i>FEMS microbial. Let.</i> 71:235-241 (1992) |
| RZ | Barla et al., "Regulation of tabtoxin production by the lemA gene in <i>Pseudomonas syringae</i> ," <i>J. Bacteriol.</i> 174:3021-3029 (1992) |
| RZ | Blumer, D., et al., "Multicopy suppression of a gacA mutation by the infC operon in <i>Pseudomonas fluorescens</i> CHA0: competition with the global translational regulator RsmA, <i>FEMS Microbiology Letters</i> , 187:53-58 (2000). |
| RZ | Blumhøyer et al., "Global GacA-steered control of cyanide and exoprotease reduction in <i>Pseudomonas fluorescens</i> involves specific ribosome binding sites," <i>Proc. Natl. Acad. Sci. USA</i> , 96:14073-14078 (1999) |
| RZ | Boyd et al., " <i>Pseudomonas aeruginosa</i> biofilms: role of alginate exopolysaccharide," <i>J. Ind. Microbiol.</i> 15:162-168 (1995) |
| RZ | Bradley, "A function of <i>Pseudomonas aeruginosa</i> PAO pili: twitching motility," <i>Can. J. Microbiol.</i> 26:146-154 (1980) |
| RZ | Brinkman, F. et al., "Evolutionary relationships among virulence-associated histidine kinases, <i>Infection and Immunity</i> ," 69:5207-5211 (2001). |
| RZ | Bullock, W.O. et al., "E. coli XL-Blue: a high efficiency plasmid transforming recA <i>Escherichia coli</i> strain with beta-galactosidase selection," <i>Biotechniques</i> , 5:376-378 (1987). |
| RZ | Castaneda et al., "The GacS sensor kinase regulates alginate and poly-beta-hydroxybutyrate production in <i>Azotobacter vinelandii</i> ," <i>J. Bacteriol.</i> 182:2624-2628 (2000) |
| RZ | Ceri et al., "The Calgary Biofilm Device: A new technology for the rapid determination of antibiotic susceptibility of bacterial biofilms," <i>J. Clin. Microbiol.</i> 37:1771-1776 (1999) |
| RZ | Ceri et al., "The MBEC Assay System: multiple equivalent biofilms for antibiotic and biocide susceptibility," <i>Methods Enzymol.</i> 337:377-384 (2001) |
| RZ | Chancey et al., "Two-component transcriptional regulation of N-acyl-homoserine lactone production in <i>Pseudomonas aureofaciens</i> ," <i>Appl. Environ. Microbiol.</i> , 65:2294-2299 (1999) |
| RZ | Chancey et al., "Survival of GacS/GacA mutants of the biological control bacterium <i>Pseudomonas aureofaciens</i> 30-84 in the wheat rhizosphere," <i>Appl. Environ. Microbiol.</i> , 68(7):3308-14 (2002) |

| | |
|-----------------------|--------------------|
| Examiner Signature | Date Considered |
| <i>Robert Zeman</i> | 9/7/05 |

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with M.P.E.P. § 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.

| | | | | | |
|---|---|----|----------------------|--------------------------|------------|
| Substitute for form 1449A/PTO & 1449B/PTO | | | Complete if Known | | |
| FIRST INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary) | | | Application Number | 10/828,557 | |
| | | | Filing Date | April 21, 2004 | |
| | | | First Named Inventor | Douglas G. Storey et al. | |
| | | | Examiner Name | ROBERT A ZEMAN | |
| Sheet | 2 | of | 7 | Attorney Docket Number | 028722-381 |

| NON-PATENT LITERATURE DOCUMENTS | |
|---------------------------------|---|
| Examiner Initials | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published. |
| RZ | Corbell, N. et al. "A global regulator of secondary metabolite production in <i>Pseudomonas fluorescens</i> Pf-5," J. Bacteriol. 177, 6230-6236 (1995) |
| RZ | Costerton et al., "Microbial biofilms," Annu. Rev. Microbiol., 49:711-745 (1995) |
| RZ | Costerton et al., "Bacterial biofilms: a common cause of persistent infections," Science, 284:1318-1322 (1999) |
| RZ | Davies et al., "The involvement of cell-cell signals in the development of a bacterial biofilm," Science, 280:295-298 (1998) |
| RZ | Deziel, E. et al., "Initiation of biofilm formation by <i>Pseudomonas aeruginosa</i> 57RP correlates with emergence of hyperpilated and highly adherent phenotypic variants deficient in swimming, swarming, and twitching motilities," Journal of Bacteriology, 183:1195-1204 (2001). |
| RZ | Drenkard, E. et al., "Pseudomonas biofilm formation and antibiotic resistance are linked to phenotypic variation," Nature, 416:740-743 (2002). |
| RZ | Duffy, B. et al., "Controlling instability in <i>gacS-gacA</i> regulatory genes during inoculant production of <i>Pseudomonas fluorescens</i> biocontrol strains," Applied and Environmental Microbiology, 66:3142-3150 (2000). |
| RZ | Dybvig, K. et al., "DNA rearrangements and phenotypic switching in prokaryotes," Molecular Microbiology, 10:465-471 (1993). |
| | Ellard, J., The NEB Transcript, 6:7 (1994). |
| RZ | Frank et al., "Kinetics of <i>toxA</i> and <i>regA</i> mRNA accumulation in <i>Pseudomonas aeruginosa</i> ," J. Bacteriol. 170:4477-4483 (1988) |
| RZ | Gambello et al., "Cloning and characterization of the <i>Pseudomonas aeruginosa</i> <i>lasR</i> gene, a transcriptional activator of elastase expression," J. Bacteriol. 173:3000-3009 (1991) |
| RZ | Gault, M.H. et al. "Staphylococcal epidermidis infection of a hemodialysis button-graft complex controlled by vancomycin for 11 months," Nephron, 45:126-128 (1987). |
| RZ | Gomez-gomez, J. et al., "H-NS and RpoS regulate emergence of Lac Ara mutants of <i>Escherichia coli</i> MCS2," Journal of Bacteriology, 179(14):4620-4622 (1997). |
| RZ | Grewal et al., "Identification and characterization of a locus which regulates multiple functions in <i>Pseudomonas tolaasii</i> , the cause of brown blotch disease of <i>Agaricus bisporus</i> ," J. Bacteriol., 177:4658-4668 (1995) |
| RZ | Han, B. et al., "Spontaneous duplication of a 661 bp element within a two-component sensor regulator gene causes phenotypic switching in colonies of <i>Pseudomonas tolaasii</i> , cause of brown blotch disease of mushrooms," Molecular Microbiology, 25:211-218 (1997). |
| RZ | Hass, D. et al., "Signal transduction in plant-beneficial rhizobacteria with biocontrol properties," Antonie van Leeuwenhoek, 81:385-395 (2002). |
| RZ | Heeb, S. et al., "Regulatory roles of the GasS/GasA two-component system in plant-associated and other gram-negative bacteria," Molecular Plant-Microbe Interactions, 14:1351-1363 (2001). |
| RZ | Henderson, I. et al., "Molecular switches - the ON and OFF of bacterial phase variation," Molecular Microbiology, 33:919-932 (1999). |
| RZ | Heydorn, A. et al., "Statistical analysis of <i>Pseudomonas aeruginosa</i> biofilm development: impact of mutations in genes involved in twitching motility, cell-to-cell signaling, and stationary-phase sigma factor expression," Applied and Environmental Microbiology, 68(4):2008-2017 (2002). |
| RZ | Hirano et al., "Role of Hrp type III secretion system in growth of <i>Pseudomonas syringae</i> pv. <i>Syringae</i> B728a on host plants in the field," Proc. Natl. Acad. Sci. USA, 96:9851-9856 (1999) |
| RZ | Hoang, T. et al., "A broad-host-range Flp-Frt recombination system for site-specific excision of chromosomally-located DNA sequences: applications for isolation of unmarked <i>Pseudomonas aeruginosa</i> mutants," Gene, 212:77-86 (1998). |

| | | | |
|--------------------|---------------------|-----------------|--------|
| Examiner Signature | <i>Robert Zeman</i> | Date Considered | 9/7/05 |
|--------------------|---------------------|-----------------|--------|

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with M.P.E.P. § 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.

| | | | | | |
|---|---|----|----------------------|--------------------------|------------|
| Substitute for form 1449A/PTO & 1449B/PTO | | | Complete If Known | | |
| FIRST INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary) | | | Application Number | 10/828,557 | |
| | | | Filing Date | April 21, 2004 | |
| | | | First Named Inventor | Douglas G. Storey et al. | |
| | | | Examiner Name | ROBERT A ZEMAN | |
| Sheet | 3 | of | 7 | Attorney Docket Number | 028722-381 |


| NON-PATENT LITERATURE DOCUMENTS | |
|---------------------------------|---|
| Examiner Initials | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published. |
| RZ | Holloway et al., "Chromosomal genetics of <i>Pseudomonas</i> ," Microbiol. Rev. 43:73-102 (1979) |
| RZ | Horii, T. et al., "Relationship between morphological changes and endotoxin release induced by carbapenems in <i>Pseudomonas aeruginosa</i> ," Journal of Medical Microbiology, 48:309-315 (1999). |
| RZ | Hrabak et al., "The <i>lemA</i> gene required for pathogenicity of <i>Pseudomonas syringae</i> pv. <i>Syringae</i> on bean is a member of a family of two-component regulators," J. Bacteriol. 174:3011-3020 (1992) |
| RZ | Jander et al., "Positive correlation between virulence of <i>Pseudomonas aeruginosa</i> mutants in mice and insects," J. Bacteriol. 182:3843-3845 (2000) |
| RZ | Jensen et al., "Human polymorphonuclear leukocyte response to <i>Pseudomonas aeruginosa</i> grown in biofilms," Infect. Immun. 58:2383-2385 (1990) |
| RZ | Jensen et al., "Complement activation by <i>Pseudomonas aeruginosa</i> biofilms," Microbiol. Path., 15:377-388 (1993) |
| RZ | Jensen et al., "Some bacterial parameters influencing the neutrophil oxidative burst response to <i>Pseudomonas aeruginosa</i> biofilms," APMIS, 100:727-733 (1992) |
| RZ | Johnston et al., "Transcriptional activation of <i>Salmonella typhimurium</i> invasion genes by a member of the phosphorylated response-regulator superfamily," Mol. Microbiol. 22:715-27 (1996) |
| RZ | Kim, Y.C. et al., "Identification of adjacent genes encoding the major catalase and a bacterioferritin from the plant-beneficial bacterium <i>Pseudomonas putida</i> ," Gene, 199:219-224 (1997) |
| RZ | Kim et al., "Sensor kinase GacS regulates production of quorum sensing factors, secondary metabolites and root colonization in <i>Pseudomonas chlororaphis</i> O6," Phytopathology, 91:S49 (2001) |
| RZ | King, E.O. et al., "Two simple media for the demonstration of pyocyanin and fluorescin," J Lab Clin Med, 44:301-307 (1954) |
| RZ | Kinscherf et al., "Swarming by <i>Pseudomonas syringae</i> B728a requires <i>gacS</i> (<i>lemA</i>) and <i>gacA</i> but not the acyl homoserine lactone biosynthetic gene <i>ahlI</i> ," J. Bacteriol. 181:4133-4136 (1999) |
| RZ | Kitten et al., "A newly identified regulator is required for virulence and toxin production in <i>Pseudomonas syringae</i> ," Mol. Microbiol. 28:917-929 (1998) |
| RZ | Kitten, T. et al., "Suppression of a sensor kinase-dependent phenotype in <i>Pseudomonas syringae</i> by ribosomal proteins L35 and L20," Journal of Bacteriology, 178:1548-1555 (1996). |
| RZ | Kleerebezem, M. et al., "Quorum sensing by peptide pheromones and two-component signal-transduction systems in Gram-positive bacteria," Molecular Microbiology, 24:895-904 (1997). |
| RZ | Koch, B. et al., "Lipopeptide production in <i>Pseudomonas</i> sp. Strain DSS73 is regulated by components of sugar beet seed exudate via the Gac two-component regulatory system," Applied and Environmental Microbiology, 68(9):4509-4516 (2002). |
| RZ | Kohler et al., "Swarming of <i>Pseudomonas aeruginosa</i> is dependent on cell-to-cell signaling and requires flagella and pili," J. Bacteriol. 182:5990-5996 (2000) |
| RZ | Kropp et al., "Increased emergence of spring wheat after inoculation with <i>Pseudomonas chlororaphis</i> isolate 2E3 under field and laboratory conditions," Biol. Fertil. Soils, 23:200-206 (1996) |
| RZ | Lam et al., "Production of mucoid microcolonies by <i>Pseudomonas aeruginosa</i> within infected lungs in cystic fibrosis," Infect. Immun. 28:546-556 (1980) |
| RZ | Liao et al., "Molecular characterization of two gene loci required for production of the key pathogenicity factor for pectate lyase in <i>Pseudomonas viridiflava</i> ," Mol. Plant - Microbe Interact. 7:391-400 (1994) |
| RZ | Liao et al., "The <i>repB</i> gene required for production of extracellular enzymes and fluorescent siderophores in <i>Pseudomonas viridiflava</i> is an analog of the <i>gacA</i> gene in <i>Pseudomonas syringae</i> ," Can. J. Microbiol. 42:177-182 (1996) |
| RZ | Liss et al., "New M13 host:DH5aF' competent cells," Focus 9:13 (1987) |
| RZ | Mahajan-Miklos et al., "Molecular mechanisms of bacterial virulence elucidated using a <i>Pseudomonas aeruginosa</i> - <i>Caenorhabditis elegans</i> pathogenesis model," Cell, 96:47-56 (1999) |

| | | | |
|--------------------|-----------------------|-----------------|--------|
| Examiner Signature | <i>Robert A Zeman</i> | Date Considered | 9/7/05 |
|--------------------|-----------------------|-----------------|--------|

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with M.P.E.P. § 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.

| | | | | | |
|---|---|----|----------------------|--------------------------|------------|
| Substitute for form 1449A/PTO & 1449B/PTO | | | Complete if Known | | |
| FIRST INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary) | | | Application Number | 10/828,557 | |
| | | | Filing Date | April 21, 2004 | |
| | | | First Named Inventor | Douglas G. Storey et al. | |
| | | | Examiner Name | ROBERT A ZEMAN | |
| Sheet | 4 | of | 7 | Attorney Docket Number | 028722-381 |

| NON-PATENT LITERATURE DOCUMENTS | |
|---------------------------------|---|
| Examiner Initials | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published. |
| RT | Marrie, T.J., "A scanning electron microscopic study of urine droppers and urine collecting systems," Archives of Internal Medicine, 143:1135-1141 (1983). |
| RT | Marrie, T.J. et al., "Scanning and transmission electron microscopy of in situ bacterial colonization of intravenous and intraarterial catheters," Journal of Clinical Microbiology, 19:687-693 (1984). |
| RT | Mascher, F. et al., "Inactivation of the regulatory gene algU or gacA can affect the ability of biocontrol Pseudomonas fluorescens CHA0 to persist as culturable cells in nonsterile soil," Applied and Environmental Microbiology, 68:2085-2088 (2002). |
| RT | May et al., "Isolation and assay of Pseudomonas aeruginosa alginate," Methods in enzymology, 235:295-304 (1994). |
| RT | Meluleni et al., "Mucoid Pseudomonas aeruginosa growing in a biofilm in vitro are killed by opsonic antibodies to the mucoid exopolysaccharide capsule but not antibodies produced during chronic lung infection in cystic fibrosis patients," J. Immunol., 155:2029-2038 (1995). |
| RT | McClean et al., "Quorum sensing and Chromobacterium violaceum: exploitation of violacein production and inhibition for the detection of N-acyl homoserine lactones," Microbiol., 143:3703-3711 (1997). |
| RT | Monzon, M. et al., "Synergy of different antibiotic combinations in biofilms of Staphylococcus epidermidis," The Journal of Antimicrobial Chemotherapy, 48:793-801 (2001). |
| RT | Morck, D.W. et al., "Microbial biofilms: prevention, control, and removal," In Disinfection, Sterilization and Preservation, Block S.S. (ed), 673-681 (2001). |
| RT | Mosteller, T.M. et al., "Sanitizer efficacy against attached bacteria in a mild biofilm," Journal of Food Protection, 56:34-41 (1993). |
| RT | Nichols et al., "The penetration of antibiotics into aggregates of mucoid and non-mucoid Pseudomonas aeruginosa," J. Gen. Microbiol., 135:1291-1303 (1989). |
| RT | Nickel, C.J. et al., "Electron microscopic study of an infected foley catheter," The Canadian Journal of Surgery, 28: 50-52 (1985). |
| RT | Nickel, C.J. et al., "Bacterial biofilm in persistent penile prosthesis-associated infection," Journal of Urology, 135:586-588 (1986). |
| RT | Ollos, P.J. et al. "Bench scale investigations of bacterial regrowth in drinking water distribution systems," Water Science & Technology, 38:275-282 (1998). |
| RT | O'Sullivan et al., "Traits of fluorescent Pseudomonas spp. Involved in suppression of plant root pathogens," Microbiol. Rev. 56:662-676 (1992). |
| RT | O'Toole, G. et al., "Biofilm formation as microbial development," Annual Review of Microbiology, 54:49-79 (2000). |
| RT | O'Toole et al., "Initiation of biofilm formation in Pseudomonas fluorescens WCS365 proceeds via multiple, convergent signaling pathways: a genetic analysis," Mol. Microbiol., 28:449-461 (1998). |
| RT | O'Toole et al., "Flagellar and twitching motility are necessary for Pseudomonas aeruginosa biofilm development," Mol., Microbiol. 30:295-304 (1998). |
| RT | O'Toole et al., "The global carbon metabolism regulator Cre is a component of a signal transduction pathway required for biofilm development by Pseudomonas aeruginosa," J. Bacteriol., 182:425-431 (2000). |
| RT | Parkins et al., "Pseudomonas aeruginosa GacA, a factor in multihost virulence, is also essential for biofilm formation," Molecular Microbiology, Vol. 40, No. 5, pp. 1215-1226, (2001). |
| | Parkins, M.D., "Gene expression in Pseudomonas aeruginosa biofilms," MSc Thesis, University of Calgary. (2000). |
| RT | Pearce et al., "The rhizosphere as a biofilm," IN MICROBIAL BIOFILMS, Lappin-Scott et al. eds. Cambridge University Press, Cambridge, UK. Pp. 207-220. |
| RT | Pearson et al., "Structure of the autoinducer required for the expression of Pseudomonas aeruginosa virulence genes," Proc. Natl. Acad. Sci. USA, 91:197-201 (1994). |
| RT | Pearson et al., "Roles of Pseudomonas aeruginosa las and rhl quorum sensing systems in control of elastase and rhamnolipid biosynthesis genes," J. Bacteriol., 179:5756-5767 (1997). |

| | | | |
|--------------------|---|-----------------|--------|
| Examiner Signature |  | Date Considered | 9/2/05 |
|--------------------|---|-----------------|--------|

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with M.P.E.P. § 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.

| | | | | | |
|--|---|----|----------------------|--------------------------|------------|
| Substitute for form 1449A/PTO & 1449B/PTO | | | Complete if Known | | |
| FIRST INFORMATION DISCLOSURE STATEMENT BY APPLICANT <small>(use as many sheets as necessary)</small> | | | Application Number | 10/828,557 | |
| | | | Filing Date | April 21, 2004 | |
| | | | First Named Inventor | Douglas G. Storey et al. | |
| | | | Examiner Name | ROBERT A ZEMAN | |
| Sheet | 5 | of | 7 | Attorney Docket Number | 028722-381 |

| NON-PATENT LITERATURE DOCUMENTS | |
|---------------------------------|--|
| Examiner Initials | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published. |
| RT | Percival, S.L. et al., "Biofilms mains water and stainless steel," <i>Water Research</i> , 32:2187-2201 (1998). |
| RT | Pesci et al., "Regulation of las and rhl quorum-sensing in <i>Pseudomonas aeruginosa</i> ," <i>J. Bacteriol.</i> , 179:3127-3132 (1997) |
| RT | Pessi, G. et al., "Dual control of hydrogen cyanide biosynthesis by the global activator GasA in <i>Pseudomonas aeruginosa</i> PA01," <i>FEMS Microbiology Letters</i> , 200(1):73-8 (2001). |
| RT | Pierson III et al. "Homoserine lactone-mediated gene regulation in plant-associated bacteria," <i>Annu. Rev. Phytopathol.</i> , 36:207-225 (1998) |
| | Plumb, D.C., <i>Veterinary Drug Handbook</i>, Fourth Edition, Iowa State Press, p. 632 (2002). |
| RT | Pratt et al., "Genetic analysis of <i>Escherichia coli</i> biofilm formation: roles of flagella, motility, chemotaxis and type I pili," <i>Mol. Microbiol.</i> , 30:285-293 (1998) |
| RT | Radtko et al., "Factors affecting antagonism of growth of <i>Phanerochaete chrysosporium</i> by bacteria isolated from soils. <i>Appl. Microbiol. Biotechnol.</i> 41:274-280 (1994) |
| RT | Rahme et al., "Common virulence factors for bacterial pathogenicity in plants and animals," <i>Science</i> . 268:1899-1902 (1995) |
| RT | Rahme et al., "Use of model plant hosts to identify <i>Pseudomonas aeruginosa</i> virulence factors," <i>Proc. Natl. Acad. Sci. USA</i> , 94:13245-13250 (1997) |
| RT | Rahme et al., "Plants and animals share functionally common bacterial virulence factors," <i>Proc. Natl. Acad. Sci. USA</i> , 97:8815-8821 (2000) |
| RT | Rashid, M. et al., "Inorganic polyphosphate is needed for swimming, swarming, and twitching motilities of <i>Pseudomonas aeruginosa</i> ," <i>Proceedings of the National Academy of Science USA</i> , 97:4885-4890 (2000). |
| RT | Rashid et al., "Polyphosphate kinase is essential for biofilm development, quorum sensing, and virulence of <i>Pseudomonas aeruginosa</i> ," <i>Proc. Natl. Acad. Sci. USA</i> , 97:8815-8821 (2000) |
| RT | Reimann et al., "The global activator GacA of <i>Pseudomonas aeruginosa</i> PAO positively controls the production of the autoinducer N-butyl-L-homoserine lactone and the formation of the virulence factors pyocyanin, cyanide and lipase," <i>Mol. Microbiol.</i> , 24:309-319 (1997) |
| RT | Rich et al., "Genetic evidence that the gacA gene encodes the cognate response regulator for the lemA sensor in <i>Pseudomonas syringae</i> ," <i>J. Bacteriol.</i> , 176:7468-7475 (1994) |
| RT | Riosen, P.A. et al., "Identification of the DNA-binding sites for two response regulators involved in control of bacteriocin synthesis in <i>Lactobacillus plantarum</i> C11," <i>Molecular and General Genetics</i> , 259:224-232 (1998). |
| RT | Rumbaugh et al., "Contribution of the regulatory gene lasR to the pathogenesis of <i>Pseudomonas aeruginosa</i> infection of burned mice," <i>J. Burn Car Rehabil.</i> , 20:42-49 (1999) |
| RT | Rumbaugh et al., "Contribution of quorum sensing to the virulence of <i>Pseudomonas aeruginosa</i> in burn wound infections," <i>Infect. Immun.</i> 67:5854-5862 (1999) |
| RT | Saleh, S. et al., "Involvement of gacS and rpoS in enhancement of the plant growth-promoting capabilities of <i>Enterobacter cloacae</i> CAL2 and UW4," <i>Canadian Journal of Microbiology</i> , 47:698-705 (2001). |
| RT | Sambrook, J. et al., "Molecular Cloning: A Laboratory Manual," Cold Spring Harbor Laboratory Press (1989). |
| RT | Sanchez-Contreras, M. et al., "Phenotypic selection and phase variation occur during alfalfa root colonization by <i>Pseudomonas fluorescens</i> F113," <i>Journal of Bacteriology</i> , 184:1587-1596 (2002). |
| RT | Schweizer, H. "Allelic exchange in <i>Pseudomonas aeruginosa</i> using novel ColE1-type vectors and a family of cassettes containing a portable oriT and the counter-selectable <i>Bacillus subtilis</i> sacB marker," <i>Molecular Microbiology</i> , 6(9):1195-1204 (1992). |
| RT | Schweizer, H., "Escherichia-Pseudomonas shuttle vectors derived from pUC18/19," <i>Gene</i> , 97:109-112 (1991) |
| RT | Schweizer, H., "Small broad-host-range gentamycin resistance gene cassettes for site-specific insertion and deletion mutagenesis," <i>BioTechniques</i> , 15(5):831-832 (1993). |

| | | | |
|--------------------|-----------------------|-----------------|--------|
| Examiner Signature | <i>Robert A Zeman</i> | Date Considered | 9/7/05 |
|--------------------|-----------------------|-----------------|--------|

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with M.P.E.P. § 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.

| | | | | | |
|---|---|----|----------------------|--------------------------|------------|
| Substitute for form 1449A/PTO & 1449B/PTO | | | Complete if Known | | |
| FIRST INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary) | | | Application Number | 10/828,557 | |
| | | | Filing Date | April 21, 2004 | |
| | | | First Named Inventor | Douglas G. Storey et al. | |
| | | | Examiner Name | ROBERT A ZEMAN | |
| Sheet | 6 | of | 7 | Attorney Docket Number | 028722-381 |

| NON-PATENT LITERATURE DOCUMENTS | |
|---------------------------------|---|
| Examiner Initials | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published. |
| RZ | Schwyn, B. et al., "Universal chemical assay for the detection and determination of siderophores," Anal. Biochem, 160:47-56 (1987) |
| RZ | Seed et al., "Activation of the Pseudomonas aeruginosa lasI gene by LasR and the Pseudomonas autoinducer Pal; and Autoinduction regulatory hierarchy," J. Bacteriol., 177:654-659 (1995) |
| RZ | Semmler et al., "A re-examination of twitching motility in Pseudomonas aeruginosa," Microbiol., 145:2863-2873 (1999) |
| RZ | Seveno, N.A. et al., "Growth of Pseudomonas aerofasciens PGS12 and the dynamics of HHL and phnezzine production in liquid culture, on nutrient agar and on plant roots," Microb. Ecol., 41:314-324 (2001) |
| RZ | Simon, R. et al., "A broad host range mobilization system for in vivo genetic engineering: transposon mutagenesis in gram negative bacteria," Biotechnology, 1:784-791 (1983). |
| RZ | Singh et al., "Quorum-sensing signals indicate that cystic fibrosis lungs are infected with bacterial biofilms," Nature, 407:762-764 (2000) |
| RZ | Smith et al., "Transformation of Pseudomonas aeruginosa by electroporation," Nucl. Acids Res. 17:10509 (1989) |
| RZ | Snyder, L. et al., "Global regulatory mechanisms In: Molecular Genetics of Bacteria," American Society for Microbiology, 309 (1997). |
| RZ | Stock, A.M. et al. "Two-component signal transduction," Annual Reviews Biochemistry, 69:183-215 (2000). |
| RZ | Strathmann, M. et al., "Application of fluorescently labeled lectins for the visualization and biochemical characterization of polysaccharides in biofilms of Pseudomonas aeruginosa," Journal of Microbiological Methods, 50:237-248 (2002). |
| RZ | Stewart, "Biofilm accumulation model that predicts antibiotic resistance of Pseudomonas aeruginosa biofilms," Antimicrob. Agents Chemother., 38:1052-1058 (1994) |
| RZ | Stover et al., "Complete genome sequene of Pseudomonas aeruginosa PA01, an opportunistic pathogen," Nature, 406:959-964 (2000) |
| RZ | Suci et al., "Investigation of ciprofloxacin penetration into Pseudomonas aeruginosa biofilms," Antimicrob. Agents. Chemother., 35:2125-2132 (1994) |
| RZ | Tan et al., "Killing of Caenorhabditis elegans by Pseudomonas aeruginosa used to model mammalian bacterial pathogenesis," Proc. Natl. Acad. Sci. USA, 96:715-720 (1999) |
| RZ | Tan et al., "Pseudomonas aeruginosa killing of Caenorhabditis elegans used to identify P. aeruginosa virulence factors," Proc. Natl Acad. Sci. USA, 96:2408-2413 (1999) |
| RZ | Tang et al., "Contribution of specific Pseudomonas aeruginosa virulence factors to pathogenesis of pneumonia in a neonatal mouse model of infection," Infect Immun., 64:37-43 (1996) |
| RZ | Tombolini, R. et al., "Colonization pattern of the biocontrol strain pseudomonas chlororaphis MA342 on barley seeds visualized by using green fluorescent proteins," Appl. Environm. Microbiol., 65:3674-3680 (1999) |
| RZ | Tortosa, P. et al., "Competence for transformation: a matter of taste," Current Opinions in Microbiology, 2:588-592 (1999). |
| | University of Calgary Animal Health Unit SOP IL: Immunization, February 1994. |
| RZ | Van Deldon, C. et al., "Cell-to-cell signalling and Pseudomonas aeruginosa Infections," Emerging Infectious Diseases, 4:551-560 (1998). |
| RZ | Vogel, H.J. et al., "Acetylornithinase of Escherichia coli: partial purification and some properties," The Journal of Biological Chemistry, 218:97-106 (1956). |
| RZ | Walters, M. et al., "Contributions of antibiotic penetration, oxygen limitation, and low metabolic activity to tolerance of Pseudomonas aeruginosa biofilms to ciprofloxacin and tobramycin," Antimicrobial Agents and Chemotherapy, 47(1):317-323 (2003). |
| RZ | Ward, K. et al., "Mechanism of persistent infection associated with peritoneal implants," Journal of Medical Microbiology, 36:406-413 (1992). |
| Examiner Signature | Date Considered |

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with M.P.E.P. § 608. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.

| | | | |
|--|---|--------------------------|--------------------------|
| Substitute for form 1449A/PTO & 1449B/PTO | | Complete if Known | |
| FIRST INFORMATION DISCLOSURE STATEMENT BY APPLICANT <small>(use as many sheets as necessary)</small> | | Application Number | 10/828,557 |
| | | Filing Date | April 21, 2004 |
| | | First Named Inventor | Douglas G. Storey et al. |
| | | Examiner Name | ROBERT A ZEMAN |
| | | Attorney Docket Number | 028722-381 |
| Sheet | 7 | of | 7 |

| NON-PATENT LITERATURE DOCUMENTS | |
|---------------------------------|--|
| Examiner Initials | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published. |
| RE | Whistler et al., "The two component regulators GacS and GacA influence accumulation of stationary phase sigma factor σ S and the stress response in <i>Pseudomonas fluorescens</i> Pf-5," J. Bacteriol., 180:6635-6641 (1998) |
| RE | Whiteley, M. et al., "Gene expression in <i>Pseudomonas aeruginosa</i> biofilms," Nature, 413:860-864 (2001). |
| RE | Willis, D.K. et al., "Isolation and characterization of a <i>Pseudomonas syringae</i> pv. <i>Syringae</i> mutant deficient in lesion formation on bean," Molecular Plant-Microbe Interactions, 3:149-156 (1990). |
| RE | Wohleben, W. et al., "On the evolution of Tn21 multiresistance transposons: Sequence analysis of the gene (aaaC1) for gentamicin acetyltransferase-3-I(AAC(3)-I), another member of the Tn21-based expression cassette," Molecular and General Genetics, 217:202-208 (1989). |
| RE | Yanisch-Perron, C. et al., "Improved M13 phage cloning vectors and host strains: nucleotide sequences of the M13mp18 and pUC19 vectors," Gene, 33:103-119 (1985). |
| RE | Yanke, S. et al., "Serum immune response to <i>Girardia duodenalis</i> in experimentally infected lambs," Veterinary Parasitology, 75:9-19 (1998). |
| RE | Zhang et al., "Induction of gene expression in <i>Escherichia coli</i> after pilus mediated adherence," Science, 273:1234-1236 (1996) |
| RE | Zhang et al., "A second quorum-sensing system regulates cell surface properties but not phenazine antibiotic production in <i>Pseudomonas aureofaciens</i> ," Appl. Environm. Microbiol., 67:4305-4315 (2001) |

| | | | |
|--------------------|---------------------|-----------------|--------|
| Examiner Signature | <i>Robert Zeman</i> | Date Considered | 9/2/05 |
|--------------------|---------------------|-----------------|--------|

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with M.P.E.P. § 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.